

Marine Safety Office San Francisco Bay Exercise Communication 2000 Conducted September 2, 1999

Executive Summary

The United States Coast Guard (USCG) Marine Safety Office (MSO) is responsible for ensuring the safe, efficient, and environmentally sound maritime operations in the San Francisco Bay, the Delta, and along the northern California coastline. The area involves a busy mix of commercial vessel traffic, numerous ferry services, recreational boaters, and public events. The MSO, in conjunction with other local emergency response units, has been establishing and refining contingency plans to ensure a smooth transition to the Year 2000 (Y2K). In an effort to evaluate maritime preparedness and enhance public awareness of Y2K issues, the MSO hosted and coordinated Y2K exercises on September 2, 1999.

These exercises tested the USCG and industry preparedness to maintain normal operations and respond to emergency situations in the event that Y2K related failures occur. The exercise consisted of seven different scenarios that simulated various marine casualties and telecommunication system failures. The purpose of the scenarios was to evaluate the port communication plan, crisis response management, interagency operations, vessel traffic services, personnel requirements, and logistics support. A total of 81 individuals representing 16 organizations participated in the 7 hour exercise. In addition, foreign visitors from China, Japan, and South Korea observed the exercise.

The exercise strengthened interagency operations and will serve to improve contingency plans and emergency operating procedures for both USCG and industry participants. The exercise received wide media coverage and will help to assure the public that maritime operations can continue successfully into the new millennium.

Background

The MSO maintains a strong partnership with the maritime community in the San Francisco and Oakland areas. As part of this partnership, the MSO conducted 2 workshops with port stakeholders to discuss the transition of the port through Y2K. The first workshop identified issues and concerns regarding port readiness, stakeholder assumptions, critical Y2K related dates, and anticipated activity on those dates. A loss of communications was the primary concern identified by port stakeholders. Without reliable communications, the port community would be adversely affected and the ability of the USCG to conduct routine and emergency response operations would be significantly hampered. The critical dates were identified as September 9, 1999, the roll over from December 31, 1999 to January 1, 2000, and February 29, 2000. December 31 is a Friday and the start of a weekend and holiday period. Although commercial vessel traffic, container terminals, and port facilities estimate less activity at this time; ferry traffic and recreational vessel traffic will increase significantly due to New Year celebrations.

The MSO developed a Y2K Port Plan in response to the workshop. The Y2K Port Plan contains an approach to identify and assess potential Y2K threats so that preemptive prevention measures

can be taken prior to Y2K. The document contains a Communications Plan so that port stakeholders and the USCG can maintain communications during the critical dates. The Communications Plan contains a table of USCG, state, and industry stakeholders and includes points of contact; primary, secondary, and tertiary communication links; and additional comments.

The second workshop was conducted to review the plan and to discuss various exercises that could be utilized to test and evaluate the plan's effectiveness and ease of use by stakeholders.

Step 1 – Establish Major Objectives

The major objective for the exercise was to test the ability of port stakeholders to use the Y2K Port Plan to maintain effective command and control during response incidents when faced with simulated system disruptions. The Communications Plan was the primary focus of the exercise. Additional objectives included:

- ***Publicly Demonstrate Coast Guard, Industry, and Port Y2K Readiness*** – The exercise was designed to be closely observed by the media and the public in order to demonstrate Y2K readiness throughout the Port of San Francisco.
- ***Demonstrate Usefulness of Joint Planning and Coordination*** – The USCG, various State offices, and industry worked together to plan and conduct this broad reaching exercise as a means to actively involve numerous port stakeholders. The exercise was designed to display the positive working relationships and strong partnership between the USCG and industry.
- ***Exercise USCG Y2K Risk Matrix*** – The Captain of the Port (COTP) will utilize a risk assessment matrix to allow vessels to enter and depart port during Y2K critical dates. The exercise was designed to determine the effectiveness of this matrix for decision support.
- ***Exercise Command Structure for Y2K*** – An incident command post will be established for each of the Y2K critical dates. The exercise was designed to evaluate and refine procedures associated with this type of command structure.

Step 2 – Identify Exercise Participants

The Y2K workshops generated interest and enthusiasm for the port exercise and provided an easy means to identify the exercise participants. The port community was involved in the planning process and in drafting the various scenarios. Port stakeholders participated at their own expense. USCG units that normally focus on search and rescue missions were involved as well as several state offices. Participants are listed in the table on the next page.

Participant Type	Participant
Port Stakeholder	
	Blue and Gold Ferry Fleet
	Chevron Incorporated
	Clean Bay Incorporated
	Hornblower Cruise Line
	Red and White Ferry Fleet
	Sea-Land Service Incorporated
State/Local Government	
	Department of Fish and Game, Office of Spill Prevention and Response
	Office of Emergency Response
	State Land Commission
United States Coast Guard	
	Marine Safety Office (MSO), San Francisco Bay
	Group (GRU) San Francisco
	Vessel Traffic Service (VTS), San Francisco
	Air Station San Francisco
	Pacific Strike Team
	Pacific Area/District 11
	USCG Headquarters

Table 1 – San Francisco Exercise Participants

Step 3 – Develop Exercise Scenario(s)

The San Francisco exercise consisted of seven scenarios:

- ***Sea-Land Engine Casualty*** – This scenario simulated an engine casualty on a Sea Land container vessel while it entered San Francisco Bay. This causes the crew to implement emergency procedures to regain engine control. This was a functional exercise scenario involving the failure of a single vessel system.
- ***MSO Risk Assessment*** – The scenario simulated the use of the risk assessment matrix to determine the safety of vessel movements and operations within the port area. This was a tabletop exercise scenario, no actual vessel movements or operations were affected.
- ***Chevron Communications Drill*** – This scenario simulated an oil spill into San Francisco Bay. Chevron attempts to report the spill to the MSO when it discovers that phone lines are inoperative. This causes refinery personnel to use the communication procedures contained in the Communications Plan. This was a functional exercise scenario that tested the contingency plans and communications capability of emergency response units.
- ***Red and White Ferry Equipment Failure*** – This scenario simulated a loss of radar and VHF radio on a Red and White Ferry while en route to the San Francisco Ferry Terminal. The failure causes ferry personnel to use the communication procedures contained in the

Communications Plan. This was a functional exercise scenario that tested secondary and tertiary communications.

- ***VTS Loss of Power*** – This scenario simulated a commercial power outage and failure of the installed emergency generator. The VTS experiences a loss of radar and must implement contingency plans to monitor vessel movement manually. During the scenario, a loss of communications is also experienced which requires watchstanders to implement special procedures. This was a full scale exercise scenario designed to test back up power and communications capability and evaluate procedures for the redeployment of personnel.
- ***M/V Hornblower Communications Drill*** – This scenario simulated a loss of propulsion on a ferry that begins to take on water as a result of the casualty. The ferry radios Group San Francisco and requests immediate assistance. The motor vessel Hornblower responds to assist the vessel but loses VHF capability and must switch to a secondary means of communication. This was a functional exercise scenario that tested secondary and tertiary communications.
- ***Blue and Gold Ferry Equipment Failure*** – This scenario simulated a medical emergency on board a Blue and Gold Ferry during a harbor cruise. The ferry experiences a simulated failure of both landline and cellular phones and must implement procedures in the Communications Plan to coordinate a medical evacuation with shoreside units. This was a full scale exercise scenario involving a test of backup communications and deployment of rescue personnel and equipment.

These scenarios were conducted during a simulated loss of commercial power that caused USCG Group San Francisco to operate using auxiliary power.

Step 4 – Conduct Exercise Activities

This section presents the primary San Francisco exercise activities, by scenario. Note that Y2K related system and equipment casualties described in the scenarios were simulated.

- ***Sea-Land Engine Casualty***
 - A Sea-Land container vessel notified VTSPS that the ship had experienced an engine casualty. The crew implemented emergency procedures and engine control was transitioned from the bridge to the engine room.
 - The engine was restarted and operated manually. The vessel regained propulsion and moored safely.
- ***MSO Risk Assessment***
 - Using the risk assessment matrix, the COTP analyzed various vessel safety factors in order to assign a risk matrix score for vessels within the area. The risk factors included vessel history, vessel type, scope of requested operations, and pre-Y2K planning and testing activities.

- The COTP used this score to determine whether a vessel should be allowed to transit or operate within the port area.
- ***Chevron Communications Drill***
 - The Chevron refinery attempted to contact the USCG to report a oil spill into San Francisco Bay and discovered that phone lines were inoperative. Chevron used the Communications Plan to identify secondary and tertiary means of communications and contacted the MSO using a VHF radio.
 - MSO initiated a response by contacting the Pollution Response Team and arranged with Group San Francisco to transport the team to the site. The MSO notified Chevron that the team was en route using a VHF radio.
 - Chevron also notified Clean Bay Incorporated that a spill had occurred and that immediate clean up was required. Clean Bay initiated a response.
 - The Pollution Response Team arrived at Chevron and contacted the MSO using VHF radio to provide a situation report on the spill.
- ***Red and White Ferry Equipment Failure***
 - The ferry vessel experienced an equipment failure that caused the loss of both primary and secondary radar and the VHF radio. The master attempted to contact VTS via VHF but was unsuccessful. He then contacted a second Red and White Ferry using a cellular phone and requested assistance.
 - The second ferry relayed the information to VTS using VHF and requested a vector to intercept the disabled ferry.
 - VTS issued a request for assistance to surrounding vessels and then attempted to notify the MSO. MSO phone lines were down, so VTS established communications with the Operations Section Chief using VHF radio and a response was initiated by the MSO.
 - VTS provided vector information to the second ferry using VHF radio.
 - The second ferry contacted the Red and White Ferry Port Captain to determine the safest port of refuge and relayed the information to the disabled vessel using a cellular phone. The second ferry provided radar navigation assistance to the disabled vessel as it proceeded to Pier 43.
- ***VTS Loss of Power***
 - The VTS experienced a loss of commercial power. The installed generator suffered a mechanical failure and could not be started manually.
 - The supervisor directed the watch team to make screen prints of the radar information and shift immediately to the manual plot board. This board provides a large map of San Francisco Bay and surrounding waterways. The information from the screen prints was

transferred to cards which were attached to the board to approximate the vessel's position.

- A watchstander was dispatched to Group San Francisco to operate VHF equipment that enables communications with vessels operating in the Sacramento River area. Vessels in this area cannot be reached using the MCX-1000 radios.
 - The VTS energized a portable generator to restore power to lights and MCX-1000 radios. The watchstanders switched to the MCX-1000 radios to continue communicating with the vessels. A broadcast message was sent to notify vessels that VTS was operating without radar.
 - Updates to vessel positions were made on the cards. When the VTS system was restored, the information on the cards was used to update vessel tracking data in the automated system.
- ***M/V Hornblower Communications Drill***
 - The ferry Good Times II was transiting San Francisco Bay when it experienced a loss of propulsion and began to take on water. The vessel contacted the USCG using Channel 16 on VHF radio and requested immediate assistance.
 - Group San Francisco issued a request on Channel 16 for surrounding vessels to provide assistance with emergency passenger debarkation.
 - The M/V Hornblower contacted the Group but communications were disrupted. The Hornblower contacted VTS using VHF Channel 14 and passed the request to them. VTS relayed the request to Group. A cellular phone was used to establish communications with the Group and a shift to VHF Channel 72 was coordinated between the players.
 - The Hornblower intercepted the disabled ship and began a simulated transfer of passengers.
 - ***Blue and Gold Ferry Equipment Failure***
 - The Master of the M/V Royal Knight determined that medical assistance was necessary for a passenger and contacted Blue and Gold dispatch using VHF radio to arrange for a hospital and ambulance pickup.
 - Dispatch was unable to contact the hospital due to the loss of phone lines throughout the Bay area. Dispatch attempted to notify the Master but communications were disrupted and could not be reestablished by the Master.
 - The Master used the Communications Plan to identify the primary, secondary, and tertiary means to contact shoreside assistance. Attempts to contact shoreside facilities were unsuccessful so the Master contacted Group San Francisco using VHF radio to request assistance.

- Group dispatched a 47 foot motor life boat and contacted the Air Station for a HH-65 helicopter to provide assistance. The passenger was transported from the ferry to the USCG vessel and then transported to the helicopter for emergency transportation to a nearby hospital.

Step 5 – Conduct Post Exercise Analysis

The exercise participants and observers met immediately after the exercise to discuss each scenario. The results of the post exercise analysis are provided in the table below.

No.	Observation/Explanation	Lesson Learned	Recommended Action
1	Additional mobile communications equipment may be needed.	The need for communications equipment that can be used as a secondary means of remote, mobile communications should be investigated.	Establish a Communications Quality Workgroup to discuss this and other communications issues.
2	Emergency situations result in extremely high communications traffic.	There may be a need to identify separate frequencies for command and control and other frequencies for administration and logistics.	Same as above.
3	Additional familiarization with the incident command system (ICS) may be required.	The use of the ICS command structure was a success and will be established during all Y2K critical dates. However, additional information about the differences between the ICS organization and normal operations should be shared with the USCG units prior to these dates.	Conduct future drills using various USCG units in order to enhance the integration of operational and emergency units.
4	Consistent information about an emergency should be provided to the public from a single source to ensure the consistency of information.	A central information center should be established as soon as the ICS is established to control the dissemination of information to the media and public.	Review contingency plans and augment as necessary.
5	The VTS experienced some delay in establishing contact with vessels in the Sacramento River Sector.	The VTS successfully monitored and advised traffic during the simulated failures. However, a faster means to redeploy VTS controllers to other sites should be identified so that no sector remains unmanned for extended periods.	Identify a means for faster redeployment of VTS personnel.
6	Emergency vehicles were blocked and/or slowed by maintenance activities being conducted in the area.	Contractors that maintain buildings and grounds near emergency response facilities should be advised to stay clear of roadways during Y2K critical dates.	Coordinate with local government and contractor organizations to minimize congestion on Y2K critical dates.

Table 2 – San Francisco Exercise Results

The exercise was a success because it provided a real world test of contingency plans with specific results that can be used to modify and improve the USCG Y2K Port Plan, Communications Plan, and Business Continuity and Contingency Planning (BCCP) documentation.

For More Information

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Or, Visit the Web Sites

Marine Safety Office:	http://www.uscg.mil/d11/msosf
Vessel Traffic Service:	http://www.uscg.mil/d11/vtssf
USCG Group:	http://www.uscg.mil/d11/sanfran/staff.htm